comprising a nucleic acid sequence encoding an exogenous interferon α or erythropoietin protein, and a constitutive promoter, in operational and positional relationship to drive expression of said nucleic acid sequence.

61 (New). A transgenic chicken of claim 60 wherein the transgene encodes an exogenous interferon α protein.

62 (New). A transgenic chicken of claim 60 wherein the transgene encodes an exogenous erythropoietin protein.

63 (New). A method for producing a transgenic chicken, having a nucleic acid sequence encoding an exogenous interferon α or erythropoietin protein in its germ line, which method comprises:

a) providing an avian leukosis viral vector comprising a nucleic acid sequence encoding an exogenous interferon α or erythropoietin protein, and a constitutive promoter operably linked to said sequence, wherein said promoter drives expression of the encoding sequence in the chicken oviduct;

b) introducing said vector into chicken stage X embryonic cells;

c) incubating said embryonic cells under conditions conducive to hatching live chicks;

d) nurturing growth of a mature chimeric chicken from said chicks;

e) mating said chimeric chicken, either naturally or via artificial insemination, with a non-transgenic chicken; and

f) identifying a transgenic chicken by screening the progeny of step e) for germ line incorporation of the protein encoding sequence.

64 (New). A method of claim 63 for producing a transgenic chicken having a nucleic acid sequence encoding an exogenous interferon α protein in its germ line.

65 (New). A method of claim 63 for producing a transgenic chicken having a nucleic acid sequence encoding an exogenous erythropoietin protein in its germ line.

66 (New). A method for producing an exogenous interferon α or erythropoietin protein in an egg of a chicken, which method comprises:

a) providing an avian leukosis viral vector comprising a nucleic acid sequence encoding an exogenous interferon α or erythropoietin protein, and a constitutive promoter operably linked to said sequence, wherein said promoter drives expression of the encoding sequence in the chicken oviduct;

b) introducing said vector into chicken stage X embryonic cells;

c) incubating said embryonic cells under conditions conducive to hatching live chicks;

d) nurturing growth of a mature chimeric chicken from said chicks;

e) mating said chimeric chicken, either naturally or via artificial insemination, with a non-transgenic chicken;

f) identifying a transgenic chicken by screening the progeny of step e) for germ line incorporation of the protein encoding sequence; and

g) mating the transgenic progeny with non-transgenic chickens to produce eggs containing the exogenous protein.

67 (New). A method of claim 66 for producing an exogenous interferon α protein

68 (New). A method of claim 66 for producing an exogenous erythropoietin protein.

69 (New). The method of claim 66 further comprising extracting the exogenous protein from the egg.